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First Language Acquisition

Learning the Meaning of Nouns

B.A. Essay
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Abstract

The acquisition of noun meaning is one of the initial stages of language development in human infants during which infants learn to assign the appropriate concepts to word forms. Children begin their learning process with no knowledge of how to name objects which surrounds them, but just within a few years the amount of their knowledge of nouns and their meanings becomes immense. This thesis demonstrates how infants infer individual words from the continuous speech stream to which they are exposed and how they learn to assign meaning to those words, suggesting that there appear to be innate mechanisms at work in children's learning. I provide an insight into how the acquisition of nouns begins and develops in infants, and discuss which abilities children use in order to acquire meaning of nouns, The acquisition of language in blind and deaf children demonstrates that an auditory and visual experience is not a prerequisite for learning meaning of nouns. I examine the impact of of speech input to noun-learning infants and speech perceptual abilities children have developed at the very beginning of their learning. Furthermore, I discuss how children segment the continuous stream of speech in order to discover new words, and how children use various cues and strategies in learning the meaning of nouns, examining children's errors in meaning and their production of new word forms. I provide support concerning the learning of nouns with experimental studies conducted by known researchers in the field of first language acquisition, which implies that there have to be innate mechanisms behind children's systematic usage of different strategies in noun learning.

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1. Introduction

Human language allows us to exchange our ideas, expressions, and feelings with others. We use language to convey information, our needs, and requests. The ability to communicate and interact with others is a part of our every day life and it seems as natural to us as any other common activity, and yet, the ability to speak and understand others has to be learned. We are not born speaking. To learn the meaning of words is an important stage in first language acquisition. The acquisition of vocabulary is the initial step in developing a language competence, where words are though of as the "building blocks" for utterances. When children learn the meaning of a noun they have to first acquire its word form and then its meaning in order to associate the word form with its precise meaning, which is the mental representation of concepts in the human mind and objects in the real world that the concept refers to.

Learning the meaning of words is a challenging task when we consider what children have to learn in order to understand even the simplest words and what those words represent. Children have to learn a word, then assign a meaning to it, find out which grammatical category a word belongs to, and furthermore, children have to be able to identify the word form and its alternative forms. Nevertheless, children seem to master this task almost effortlessly regarding the speed they learn new words. For instance, children acquiring English as their first language begin producing their first words when they are about one year old. At two years of age they are able to produce between 100 to 600 words, and by six years, their vocabulary consists of around 14,000 words. Those numbers imply that children between two and six years acquire nine to ten words a day (Clark, 2009, p. 89). It is not surprising that children's fast progress in language development became a focus of many researchers in linguistics.

The recent focus of vocabulary research is the investigation of the processes employed in infants acquisition of noun meanings, considering the functioning of innate processes at work in learning word meanings. The learning process is investigated by exploring how children handle information in vocabulary learning and how they use vocabulary in conversations. To explore children's early language development researchers often conduct investigations and experiments where children are presented

with various tasks in order to discover which strategies and cues children use to acquire meanings. Children's acquisition of noun meanings is not only dependent on their general cognitive abilities, but also on some innate mechanisms which help children with the learning process. When children learn the meaning of nouns they use mechanisms and strategies which they did not learn, the mechanisms form on their own or are innate.

The structure of the essay is as follows. In section 2 I discuss how children manage to recognise individual word forms in adults' speech and children's common errors in usage of particular words. In section 3 the process of assigning meaning to acquired words is discussed, which learning styles children use and prefer when learning word meaning, and how it affects their early vocabulary. The next section discusses children's usage of several strategies which helps them to assign a correct meaning to a word they encounter for the first time. In section 5 I explain children's errors in understanding the meaning of early acquired words, which are connected to the strategies children employ in learning meanings for words. In section 6 I discuss children's ability to produce new word forms with the usage of several strategies. The last section concerns the acquisition of words in blind and deaf children demonstrating the sensory abilities are not necessary in order to learn and understand concepts behind words or signs.

2. Word Recognition

Children have to be able to recognise distinct units of speech in order to attach any meaning to them. When a person speaks, he or she does not realise that there are usually no pauses between the words. It is therefore a challenge for a child to distinguish the different words in a continuous stream of sounds produced by the adults that surrounds the child. For instance, the following utterance *theyellowrabbitsjumped* has to be broken down into words 'the', 'yellow', 'rabbits', 'jumped'. Furthermore, it has to be broken down into smaller pieces of words such as the past tense suffix 'ed' of the verb 'jumped' or the plural ending -s as in 'rabbits'. When exactly children begin to start recognising distinct chunks in the stream of sound and what abilities that requires is explained in this chapter, followed by experimental evidence (O'Grady, 2005, p.9).

Research in the area of word recognition has developed because of the evidence from a number of experiments show that during the second half of the first year infants have begun to learn about the sound organisation of their native language. The answer to the question to what extent children are predisposed to attend to speech sounds has been addressed from several different perspectives in the research on language acquisition over the last twenty years. The more that researches learn about how children analyse, process and categorise the speech stream, the more complex the answer becomes (Clark, 2009, p.51).

2.1 Segmentation Strategies

When children hear their parents speaking they begin to break the speech sounds, which express the sentences, into distinct units. Before children can learn the meaning of a noun, they have to realise that the sound sequence they hear is made up of individual units. The process of breaking down the units is called segmentation by linguists. One year old infants have been shown to be sensitive to the sound structure of their native language, such as the syllable structure of words in their native language, which are useful in word segmentation (Jusczyk, 1998, p. 160). In the study conducted by Jusczyk and his colleagues, it has been found that children aged one to one and a half year are also sensitive to the predominant stress pattern in their language. Juscyk states that the fact that children show response to those "potentional markers of words boundaries" in the input led the researchers focusing in greater detail on the segmentation abilities of infants at this age (Jusczyk, 1998, p.160). Children are able to segment the continuous speech flow on their own, they have a natural predisposition for this task.

To demonstrate the children's early abilities to segment words from the speech of the adults, we consider the experiment conduced by Jusczyk and Aslin (1995) who used the head-turn procedure in order to discover whether a seven and a half month English-learning infant is able to segment monosyllabic words such as *cup* or *dog*. Firstly, the children were familiarized with the words cup and dog, and then the researchers measured children's listening times to four different passages containing six sentences. In two passages the familiar word appeared in every sentence. In the remaining two passages, the structure was similar, but included words which were not

familiar. The infants were listening to the passages with familiar words for longer time than those with unfamiliar words (Jusczyk, 1995, pp. 1-23).

Words in a language have a rather regular profile in their sound pattern, therefore, the more children encounter the individual profiles the easier it is for children to recognise them. The most reliable words profile in the English language is stress, which is “the tendency of some syllables to be more audible than others” (O'Grady, 2005, p. 12). The frequent stress pattern in nouns consisting of a stressed syllable followed by an unstressed syllable makes it easier for children to pick up words. For instance, consider the sentence “the bird might land on the fence”. This example demonstrates that in the English language nouns and verbs tend to have stress on at least one of their syllables, while other type of words do not. In an experiment conducted by Jenny Saffran with her colleagues (1996) eight months infants listened for two minutes a random combinations of three- syllable nonsense words which were run together without pauses. The stream of words was generated by a sound synthesiser in a monotone female voice Furthermore, the synthesiser did not provide any information about word boundaries, stress or acoustics difference. After the time period, the researchers let the infants hear the invented three syllable words again. Some of the words were new, but some of the words were in the original recording. Surprisingly, the infants were more likely to turn their heads in response to words which were in the original recording than those which were not. The turning of their heads is a signal that they noticed the words they previously encountered. The infants were able to recognise the syllable combinations that were played in the two minutes stream of randomly generated words. Jenny Saffran (1996) states that their study suggests that “infants possesses experience-dependent innate mechanisms that may be powerful enough not only support word segmentation, but also the acquisition of other aspect of language”(Saffran, 1996, p. 1927). In addition, Ann Peters and Svend Stromquist (1996) suggest that children also pay attention to particular syllables where the stress works like a 'spotlight' which makes it easier for children to pick out the words from the speech stream. In the English language the predominant pattern is the strong-weak pattern as in the following nouns: *DOCtor*, *CANdle*, *DOGgie* etc.

In the study conducted by Peter Jusczyk (1998), it had been shown that children

prefer the strong weak pattern from early age. Nine months old infants will listen to for a longer time a list of words which have the strong-weak pattern syllables than those words which do not. Another experiment conducted by Jusczyk (1995) supports the same notion. Seven month old infants listened to for forty five second passages where words with strong-weak pattern would appear, for instance a word *HAMlet.* Then the infants listened to lists of repeated words, some of the words appeared in the passage, such as 'hamlet' and words which had not appeared in the same passage. The researcher measured how long the infants kept their head turned towards the speaker. It revealed that they listened for a longer time to words that had appeared in the previous passage than those words which had not. The infants focus was on the strong weak stress pattern. In those experiments the findings shows that the children who acquire the English language rely mostly on stress cue when they begin to segment words from fluent speech of adult speakers (Jusczyk, 1998, p. 159).

It is apparent from the experiments previously mentioned that from early age the English-learning children are able to segment words which start with a strong syllable. To be able to segment words is a gradual process where “the breaking up the speech at the strong syllables onset” is a good start for the English-learning children (Jusczyk, 1999, p. 202). Children's sensitivity to strong syllables helps children to divide longer chunks of speech into smaller components, but children often segment the sentence incorrectly and end up with too long chunks which do not correspond with any word in their language.

2.2 Segmentation Errors

Children have to identify the individual units, concerning words, phrases, morphemes, from the speech. This problem is also connected with invariance, because the same speaker might not always pronounce the word in the same manner. For instance, in a different context he or she would pronounce a world with a different intonation. While children are picking up words from the stream of speech the adults around them produce, they often end up with larger bits of speech than just individual words, because they tend to recognise words as chunks. The distinct parts of utterances produced by the adults appears to be as if they belong together without any indication that they can stand on their own. It is simple for adults to identify distinct words from the speech stream,

but it is difficult for children because they do not know yet what those words mean. They need to learn the meaning of the words. (Clark, 2006, p. 52).

When children hear the adults saying 'What's that?', which is pronounced 'whadat', or 'give me',which is pronounced 'gimme' by children. The distinct words are indivisible for one year old children. Ruth Clark describes a typical instance of segmentation error in children's speech in her paper “Performing Without Competence”. The error was detected in the speech of a two year old boy named Adam. He tend to produce the following segmentation error – *It's fell*, *It's has wheels*, *There it's goes*. Those errors demonstrate that Adam misanalysed *it's* when he heard an adult producing sentences as *It's daddy* or *It's hot*. An adult speaker recognises that the utterance *it's* consists of the word *it* and *is*. Adam must have assumed that *it's* is a single one part word. Therefore, Adam started using *it's* where an adult speaker would use *it* (Clark, 1974, pp. 1-10).

The process of learning the meaning of nouns requires children's abilities to segment the chunks of words they hear in the adult's speech, but while analysing the distinct units, they tend to make certain errors. It is because they have not yet learned the meaning of the words they just managed to distinguish from each other. Adult's input is also important in children's language progress as demonstrated in the head-turning experiments. The process of how how children learn meaning of nouns is described in the following chapter.

3. Learning the Meaning of Nouns

When children manage to break the speech stream down correctly into individual units, they face two obstacles. The first obstacle the children have to solve is to map meanings to words and phrases. Children have to discover how to express meanings through words and phrases available in their language, which they hear from the adults, for every conceptual domain. Children's ability to quickly find and assign meanings to words is called fast mapping, and will be further discussed in this chapter. The second obstacle the children face is to find the best possible words of their language to communicate their intentions to others. In learning new words children also need to take a detailed account of what they hear adults say, on which occasion, and for what

purpose (Clark, 2009, p.75). Children employ different types of learning: analytic and gestalt type of learning, which will be also discussed in this chapter.

The first forty to fifty words children produce which are reported in diary studies fall into several categories. They are mostly words for people, objects, toys, vehicles, body parts, and animals. The most known study of an English-learning child's early word production is of an eleven month old boy named Ted whose vocabulary progress was recorded over the period of eight months. The report began when the boy was eleven months old. The list of the recorded words contains forty three words where thirty-one words are nouns, the words which are best suited for naming people and objects (Gentner, 1982, p. 305).

Children prefer nouns possibly because of the input they receive from their parents. When a mother speaks to her child, she produces more verbs than nouns. The verbs used in a mother's speech are likely to encourage the child to produce more nouns than verbs. For instance, when a mother asks her child “what's this?”, the child produce responses containing nouns rather than verbs (O'Grady, 2005, p 42.) A research conducted by Sandhofer (2000) and her colleagues suggests that parents tend to use nouns which are easier for children to acquire than the verbs which the parents use. Those nouns in parent's input are often names for solid objects with a similar shape whereas verbs are more diverse (Sandhofer, 2000, p.561).

Children are good at finding meanings for unknown nouns. The meaning of words help children to organise and categorise the world around them. Each child learns in his or her own way, approaching the learning of new words differently, but ”the quantity and quality of language input influences language learning” (Sandhofer, 2000, p. 562). For instance, Snow (1977) conducted a study in which the interaction between children and their mothers was recorded, and he discovered that the differences found in individual children's language productions reflected the differences the children were getting from their mothers' input. According to Sandhofer, there is a difficulty in measuring the input, which can depend on what the children learn and also on the underlying mechanisms (Sandhofer, 2000, p.561). Researchers distinguish between two different types of learning, analytic type and gestalt type of learning, which might explain in which respect the input affects the children's progress in learning the meaning

of words.

3.1 Analytic Type of Learning

The children who tend to use more nouns than any other word type focus on breaking speech into its smallest component parts from the very beginning of their language acquisition. Those children are good at breaking down the sentences adults produce into individual words. This type of learning is called “analytic”. How strong the preference for nouns is can vary from child to child. Those children whose early vocabulary is almost exclusively composed of nouns are sometimes called “referential” because the nouns they are using often refer to objects and people. For instance, they use words as *mommy* and *daddy* to refer to their parents. Children who use this learning strategy produce short and clearly articulated one-word utterances. It is possible to assume that it is due to the parent's speech, because parents of analytic learners often employ “What's that” play so the children learn individual words. Analytic learners also use simple words to describe their physical state or desires. They focus on patterns while learning about new words. For instance, when they play with their toys such as wooden bricks, they like using them to build structures or patterns (O'Grady, 2005, p. 44).

3.2 Gestalt Type of Learning

The second type of learning type requires that a child memorises and produces large chunks of speech. The memorised chunks of speech are often very badly articulated. For instance, a child would says *whatdat* when trying to say “what is that” or *awgone* for “all gone”. This type of learning is called the gestalt style of learning (from German *Gestalt* ' shape'), because in psychology it refers to patterns which are perceived as a whole. Children do not solely rely on either gestalt type of learning or analytic type, they rather have tendencies towards one approach or the other. Children who prefer gestalt type of learning are sometimes called “expressive”, because they focus more on words and phrases which express activities or relations. For instance, words like *bye-bye*, *hi*, *no*, *more*, are all examples of the utterances produced by the gestalt learners. Children in whose vocabulary dominate relational terms, greetings and words for expressing feelings are more involved in the social world than children preferring gestalt type of learning. It is possible to assume that the differences in vocabulary

development are due to children's early experience with language because of the input they receive from their parents (O'Grady, 2005, p. 44).

3.3 Fast Mapping

Children are fast at learning new words independently of their preferred learning technique. In linguistics the rapid learning of new words is called fast mapping. Fast mapping not only includes learning the meaning of words, but also new facts. For instance, a child will not only learn a meaning for a particular word, but also its function. In different kinds of experiments it has been shown how good children are at fast mapping in the case of word meanings. In an experiment conducted by Heibeck and Markman (1987), they came up with a task, where they asked three and four year old children to bring them an object for which they asked. The researchers asked the children to bring them a hexagon from a chair where there was also a triangle. They told the children to bring the hexagon, not the triangle. The children who were tested already should have known what a triangle is. They were quick to realise which object to bring. Further in the experiment children were asked to identify a hexagon from a picture which included several other objects of different shapes. The children did very well, they were able to pick the correct object from the picture about three-quarters of the time. They were able to say the name of the object about a third of the time. The children only needed to hear the word *hexagon* once (O'Grady, 2005, p. 51). The results of those experiments show that children use fast mapping in order to quickly form rough hypotheses concerning the meaning of a new word. The tested children were able to gain new information about the object, such as shape from a brief encounter.

The input children receive from their environment is an important part of their learning progress. In learning the meaning of new words, children employ different learning styles which are dependent on children's experience with a language. Children’s ability to fast map in order to form hypothesis about the meaning, which enables them to “narrow down” the meaning of a word, might be taken as an indication for innate knowledge which is specific to language. (Heibeck, 1987, p.1021). When children encounter a new word, they use the linguistic and non linguistic context in which the new word appeared to quickly learn the information about its meaning.

Children use several strategies, which are not learned in making the initial hypothesis about the words' meanings, which help them to assign an accurate meaning to a new word. Those strategies are discussed in the next chapter.

4. Strategies Used by Children in Acquiring Meaning of Nouns

A good initial guess is required when a child learns a new meaning for a noun. O'Grady (2005) states that children know what types of meanings to look for when they encounter a word for a the first time (p. 52). Children use a limited number of strategies when acquiring a noun, each of which will be considered below: the whole object assumption, the type assumption, the basic level assumption, and the mutual exclusivity assumption, which are all part of children's cognitive constrains on learning. Those strategies are easily recognisable because most of the first nouns children acquire refer to the types of objects that have common properties. The strategies only help children with recognising names for whole objects, but for different parts, properties, and broad notions of objects, children use help from their environment. The learning of meaning of nouns requires social constraint. For instance, when an adult points at an object which is not of basic level, concerning the whole object, they use linguistic cues in such a way that it makes the meaning apparent for the child that the word has different status than the basic level. When parents present a part of an animal, for instance ears of a rabbit, they do not say “look ears”, but they say look “this is a rabbit and these are his ears”. So they introduce the new part of an animal with a possessive construction (Bloom, 2000, p. 82). Furthermore, children's previously acquired knowledge helps with their acquisition, which is their linguistic constraint.

4.1 The Whole Object Assumption

The whole object assumption (WOA) states that an unknown word refers to a whole object rather than a part, substance, movement, or colour if the child has yet to assign a word to that particular object. Children are prone to think that the name of a new object stands for the whole object. It is not clear whether a child treats a novel label as referring to the shape of some object rather than the object itself. Several studies have discovered that a child will extend an object label to objects of the same shape rather than those of the same colour. Landau argues that children's response on the basis of

shape might only be due to what is prominent in their environment. Woodward (1992) tested babies' responses to what they saw on two monitors. On one screen babies viewed moving substances that have no particular form, such as flowing lava, and on the other screen they viewed a static novel object. Woodward made the object less prominent than the moving substance. The babies were allowed to watch both screens freely. They preferred looking at the substance in motion to the static object. The babies then heard a word that either referred to the object or the substance. The prediction from the WOA states that they should turn to whole object rather than to whatever is the most prominent. It applied for 18 months old, but for 24 months and older the findings were less definite. WOA promotes rapid learning of new labels for objects, it poses problems in leaning parts of substances, or colours (Landau, 1994, p.218).

4.2 The Basic Level Assumption

The basic level assumption captures the categories of whole objects which tend to be categories which are identified by psychologists as the basic level. From the conceptual perspective, members of the basic level category are easier for adults to categorise than objects which are bellow or under this level. For instance, a dog at the basic level to animal, which is above the basic level, or Beagle which is under the basic level. According to Tversky (1984), “Members of a basic level category have more parts in common with each other than with members of a higher level category, and they are also more readily distinguished from members of neighbouring categories in the same domain than are instances of lower level categories” (Tversky, 1984, p.172). What is considered to belong to a basic level does not depend only on the actual term used, but also what it is being used for. When a child is already able to produce the term *dog* for dogs, in accordance with the basic level assumption, the child should look for a category at the same level of specificity when trying to map the newly heard term *cat* and so the child is more likely to assume that *cat* refers to cats in general and not just to some subgroup of cats like Siamese or Manx cats. When children assume *dog* means any four-legged animal, it is an error because of overextension discussed in section 6.1. The basic level assumption depends on temporal proximity in uses of a familiar term like *dog* next to an unfamiliar one like *cat*. “Otherwise there would be less basis for children to suppose that dogs and cats belong in the same general domain” (Clark, 2009, p. 125).

4.3 Mutual Exclusivity

This form of assumption leads children to expect that every new object has only one label. This assumptions help children override WOA. According to Markman (1990), it enables the children to learn terms other than object labels. Children constrain the meaning of words by assuming that words are mutually exclusive, considering that each object has only one label. For instance, an object cannot both be a chair and a dresser. The evidence that children assume words as mutually exclusive is that it helps explain why children produce some particular errors. Children tend to make errors concerning class inclusion such as *dog* and *animal*, because it violates mutual exclusivity. The principle of exclusivity can be applied when two objects are presented from which one already has its label and the other one does not. If the new label is then introduced to the child, he or she should, according to the mutual exclusivity, rejects already labelled object and assume that the other one is being named (Markman, 1990, p. 68).

4.4 Social Constraints

Adults help children to learn the meaning of words. It includes pointing at objects while naming them or explaining what its meaning is. Children pick up the meaning by listening and partake in conversations. According to O'Grady (2005), children have some sense of what the adults are saying to them. Children seem to be synchronised with other humans, which means that they pay attention to what adults around them do. Several experiments illustrate how this works in practice. For instance, an experiment conducted by Moore and his colleagues (1999), with two year old children where an adult person looked at and named an object saying “Look a modi” while the child's attention was drawn to another object by lighting it up. When children were then asked to get the object named modi, they get the object the adult was looking at. The children were able to tell that the adult was naming the object he was looking at, regardless of the other lighted up object. In another experiment the mother, her child, and the experimenter were playing with three novel objects. The mother was asked to leave and the experimenter picked up a new, unknown object. When the mother was asked to return, she addressed the child “Oh Look a modi, a modi, a modi.” The child automatically looked at the object brought to play, because he automatically assumed that his mother would not be excited about a toy she had previously seen (O'Grady,

2005, p.55). Children make use of their social-cognitive skills in order to determine adults' intentions as demonstrated in the previous experiment about their abilities in learning new words (Tomasello, 2000, p. 404).

4.5 Linguistic Constraints

When children learn new meanings for nouns they also rely on their current knowledge. This notion was tested by the following experiment conducted by Katz and her colleagues (1974). In their experiment, children were shown two dolls whose appearance was near identical, except for their hair colour. One was blonde and the other brunette. The researchers referred to one of the dolls as ”Zav” or “a zav”. After some time, children were asked to dress “Zav” or “a zav”. Children who were 17 months old were able to distinguish the presence or absence of the indefinite article. When the experiment was repeated with blocks instead of dolls, the indefinite article did not matter to children. Even very young children were able to figure out that dolls are more likely to have a personal name then a block (O'Grady, 2005, p.57).

Children do not necessarily rely on the input from their speech community, they employ different strategies, which are innate, and they are all part of the complex process of word learning. children make use of the linguistic knowledge of previously learned words when assigning the meaning to new word's concepts. Furthermore, children between 18 to 24 month are very good at guessing the communicative intention of adults as demonstrated the previous experiments, which is part of their social constraint. Even thought children are very good in assigning the meanings to new nouns, they do not always use the meanings appropriately. Sometimes they use the meaning of nouns in broader or narrower sense than their language allows.

5. Errors in Meaning

Children have the meaning of nouns associated with their early words, which sometimes correspond with the meaning employed in adult's input. In many instances the agreement between the correct match between the nouns and its meaning is not precise. The most typical errors that children produce in meaning are overextension, and underextension, which are discussed in this chapter. Children's production of over extended meaning for words is viewed as a communicative strategy which is defined as

a device to communicate a particular meaning of a word, and underextension is seen as "arising in comprehension when child hypothesises about the boundaries of the acquired concept", where children make hypothesis about the boundaries of the acquired concept for the newly acquired word (Walazsewska, 2010, p. 314).

5.1 Overextension

When children acquire new nouns they often use the meanings for their words, in too broad a manner and they then refer to more words than their language allows. For instance, when a child calls other four-legged animals "dog", while referring to horses or cows. Such errors involve overextension. Those errors do not last for a very long period of time. Overextension errors are quite common in the early stages of the acquisition of new words. Over thirty percent of the words used by one or two years old children over extended at least some of the time. Overextension are based on perceptual similarity, which means that children name objects based on their common features. Children will name animals which have wings, beak, and feathers the same word. The common features are not the only aspect on which the overextension errors are based. Function is also an important aspect of what a word refer to. For instance, a four year old child was told that one of the backward-L objects on a presented picture is called *a fendle*. The child then assumed that all similarly shaped objects are called *fendle*. But when the child sees a similar object which works as a container for similar objects of smaller size, the child is not too prone to call the container *fendle*. The child see that it has a different function (Bloom, 2002, pp.165–66). An example of the perceptual similarity upon which a child overextends words comes from a child who overextended the word clock, using it while referring to bracelets because they are also worn on wrists. Nevertheless, children stop making this kind of error when they are around two or two and half years old. It is possible to assume that overextention might be deliberate. For instance, a two years old child was using the word *dog* while describing several different animals, such as a cat or a sheep. When the child acquired the correct word, the wrong word was replaced by the correct one. The child was only using the incorrect word until he or she acquired the correct word (Clark, 1993, p. 92). A supporting evidence for the claim that overextension errors could be deliberate comes from a study conducted by Clark where children were given a naming task. Five

children of twenty one and twenty five months old were asked to name distinct pictures. The researchers then identified the overextension in order to prepare a comprehension test. If the child overextended the word dog, the test would include pictures of different animals together with the dog. The child was asked to identify the dog on the picture. Overextension in understanding was less frequent than in naming. Nevertheless, children do make mistakes with less common words, for instance a hippo, especially if they are asked to identify some more unfamiliar animals (O'Grady, 2005, p.49).

5.2 Underextension

Another common type of noun error in early language learning is called underextension. It is "the use of lexical items in an overly restrictive fashion" (O'Grady, 2011, p.370). Underextension errors appear when the meaning a child assigns to nouns is too narrow. For instance, if a child calls the family cat *kitty*, the child might not refer to other cats as *kitty*.

Underextensions are not as common as overextensions and they are more difficult to notice. They should not be seen as involving communicative strategy, rather they originate from children's incomplete understanding of word meanings. To learn the meaning of a new word used in any language, children tend to construct special concepts which depend on their cognitive abilities and adjustment to the conversational situation (Walaszevska, 2010, p.322). According to O'Grady, the underextension errors reflect children's natural tendency to focus on the prototypical members of a category. The word which is a potential referent to many words differs in how good example of some properties associated with a particular concept they are. For instance, the potential referents of the word *dog*, *collies* or *spaniels* have more properties associated with the concept dog such as long hair or size compare to a small breed of dog as *chihuahua*.

Children's production of over-extended and under-extended meaning for words appear to be deliberate when children do not know the correct word for the concept because the word has not yet been acquired, or the children are still learning the appropriate meaning for the concept, but cannot retrieve the meaning from their lexicon at the time of speaking. Underextension and overextension of word meaning are usually based on some common property of the prototypical concept. When children learn new meanings, they use information about the referents of words, which are the knowledge

about the appearance of objects, information about their function, and properties. Any information the children gain from the encounters with a particular object becomes “the meaning component of the word” children learn to associate with the component and the basis which the world is being used (Rescorla, 1980, p. 333). When children manage to learn the appropriate meaning of nouns, they become very good at creating new word forms from previously acquired words.

6. Creating New Word Forms

Words supply humans with the means for every day conversation, they are needed in order to communicate our ideas, thoughts, or state of being. When children acquire new words, they are ready to start making generalisation about kinds of words and its usage. Children need words in order to instantiate the syntactic categories, for instance, on word level containing nouns, verbs, adjectives, or at the phrase level for instance, noun phrases or verb phrases. Furthermore, children need words in order to realise grammatical relations between words, for instance, the relations between agreement of subject and verb for number and person. Children not only learn new words, they also create their own words, many of which are not found in adult speech. While children learn the words of their language, they must learn how to use the distinct word forms which they hear amongst adult speakers (Clark, 1995, p. 2). A detailed diary record of one child showed that the child produced 1,351 different innovative nouns in four years, beginning when he was twenty two months old. The child was producing one innovative word per day on average (O'Grady, 2005, p.28). Children are able to infer new word forms from the input they receive from their environment without any previous knowledge what those words are. It seems as they have some inherited mechanism for inferring new word forms. When children produce new word forms, they make use of what they already know about their language. In order to create new word forms children use the following strategies: conversion, productivity, and compounding.

6.1 Conversion

Children begin to produce words by using conversion when they are about two years old. Children often come up with words which they have to stop using because of their ungrammaticality. Most conversion errors in the English language reflect the production

of illegal verbs from nouns or adjectives. For instance, in the phrase “Did you needle this”, a child uses the noun *needle* for a verb when asking an adult about sewing a sock. In the phrase “I'm talling” for “I'm growing tall”. The adjective *tall* is used by the child as a verb for growing. Children's usage of conversion indicates what children find particularly easy in language. It seems that children like what is called by Eve Clark (1993) “simplicity of forms”. Children like to make new words from other words without making any adjustment. It is easier for children to coin new words when their form is simple, for instance, when the root of a word does not change in its construction. Simplicity of forms, therefore, means creating new words from old words without changing their form (Clark, 1993, p.120). A great amount of English verbs are created from nouns. As pointed out by O'Grady, in the English language the speakers “do not needle things, but they do sometimes hammer them” (O'Grady, 2005, p. 30). Children are able to figure this out and slowly acquire the ability to form words by conversion appropriately.

6.2 Productivity

The study of how children use derivation as another strategy in acquiring new word forms reveal their preference for endings which are used on a large number of words. Linguists call it productivity. It is a strategy used by children when they create new words from endings which can be used with many different words. The productivity strategy can be seen in the speech of a four year old boy who learned the first four most common derivational suffixes in English, -er, -ie, -ing, and -ness whilst using the derivational strategy. In his speech there were recorded instances of words with the following endings: -er for *doer* or -ness for bigness. The derivation strategy can be seen in practice from the ending -er and -ist. It is possible to connect the ending -er to almost any verb to give a noun the meaning “one who does x” so called “doer”, eg. walker or runner. The usage of derivationl endings is restricted In English, speakers do not say “writist” on analogy with “typist, but rather writer. It is expected for the children to acquire the ending -er early on as the following experiment conducted by Eve Clark and Barbara Hecht (1982).

6.2.1 The Productivity Experiment

Children aged three to six years were given a task where they were asked to make up names for “doers” and different types of instruments. The researchers asked the children questions such as “I've got a picture of someone who crushes things. What could we call someone who crushes things?” As for instruments, the researchers asked a similar question. They wanted to know a name of an object which does something. Children of all ages tend choose to use the -er ending in those instances. The children call someone who crushed things a “crusher” and someone who cuts a “cutter”. The ending -er can be also over used by children as when they call a cook “cooker”. Because the ending -er is so often used in turning verbs into nouns, children generalise that every noun ending in -er must have come from a verb. O'Grady explains that it is why a word *hamm* very often appears in many diary studies on children language progress as in the sentence “We're gonna hafta hamm this nail” (O'Grady, 2005, p. 32), where the children assume that *hamm* is the correct form of the verb hammer.

6.3 Compounds

Over 80 per cent of innovative words which are found in speech of two and three years old children are compounds. A compound is a word which is created from already existing word or words. There are thousands of compounds in the English language. The familiar instances of compounds are *blackboard*, *spaceship*, or *White house*. Most of the compound words created by three years old children are noun-noun type compounds. For instance, *sky-car* for an airplane or *store-man* for a clerk. Noun-noun compounds are created from two nouns with heavier stress on the first item, which is the modifier, than on the second item, which is the head. The head noun “picks out the category being talked about” (Clark, 1985, p.84). For instance, a speaker of English would say *MAILbox*, where the first syllable is stressed, which is the modifier, whereas the second item in this compound is the head determining the category (O'Grady, 2005, p. 28). Children are very good at telling when it is appropriate to use a compound as demonstrates the following experiment conducted by Clark and her colleagues (1985).

6.3.1 The Compound Experiment

The researchers came up with elicitation tasks. In the first task the researchers tried to

discover whether contrasting members of the same category would be labelled by the children with compounds more often than objects which are not related to the category. In the second task the researchers focused on children's labelling of three types of subcategories: inherent semi-inherent, and accidental. Children who were two to four years old were asked to create compounded names for objects which were on a picture. For instance, a house made out of pumpkin, which represents the inherent subcategory or a pan containing a small frog, which represents the accidental subcategory (Clark, 1985, p.87). Children were likely to use a compound when there was a connection between the two nouns than when the connection can be perceived only temporary or accidental. They described the house made of pumpkin as a *pumpkin house*, but they were less likely to describe the other picture of a frog on a pan as a *frog pan*. It is possible to think that children assumed that the frog is just temporarily on the pan and therefore they did not create a compound word because there was no apparent connection between the two nouns (O'Grady, 2005 p. 34).

Children employ several strategies in creating new words, they use their previous linguistic knowledge in order to create new word forms. Children tend to create new forms from previous forms without any adjustment which often leads to creating words which do not appear in adult speech. Furthermore, children make use of the derivation strategy where they use the derivational endings, for instance, the suffix -er, to create new words. They also use a strategy where they create usually noun-noun compounds for objects they talk about, but not know yet the correct name. While creating compounds, children hypothesise the connection of two different objects. When children learn new words or create new word forms, in normal circumstances they have the ability to perceive the world by their eyes and their ears, but what happen when they are deprived of this experience which seems to be an important part of the learning process will be discussed in the next chapter.

7. Exceptional Circumstances in Learning the Meaning of Nouns

What exactly are the circumstances under which the words and their meaning are acquired? An obvious hypothesis, based on the previous sections, is that children must hear the speech of others in order to detect the pattern and rules of the language which

surrounds the children, they need to see what their parents are looking and pointing at while they are explaining things to them. Such hypothesis about language learning is false. To acquire a language, children do not need perfect sensory abilities because children who are deaf cannot hear anyone speaking, they are never exposed to ordinary conversation, but they are still able to learn a language that involves complex system of gestures, for instance, the American Sign Language (ASL) (Gleitman, 2007, p.340). Children acquire sign languages at the same rate as children who can hear, who learn spoken language (Bloom, 2000, p.7)

Blind children are unable to identify objects out of their reach, they cannot follow at which object their parents are looking at while naming them. Surely the visual experience is an important part of learning new words and it is usually considered to be the driving force in language acquisition, but a blind child is deprived of such experience, but still manages to learn a language. Blind children cannot make use of the pointing cue as do seeing children when learning the meaning of objects, but they are still able to learn new words and use them at a similar rate to sighted children. The age when a child which can see acquires his or hers first word and first 50 words is very similar to when a blind child learns them. The following chapter discusses the acquisition of language in blind and deaf children, demonstrating that these sensory abilities are not necessary in order to learn the meaning of words or signs.

7.1 Blind Children

In the early studies focused on the acquisition of language in blind children, the view amongst scientists was that blind children show difficulties and delays in their language development. The scientists assumed that because blind children have limited access to perceptual characteristics of the external world their concepts for words must be limited whilst lacking generalisation. However, children who are blind are able to form concepts which are equivalent to concepts which are developed by people who are able to see. The limitation in the world *perception* does not affect the blind children in learning and forming the concepts that underline the meaning of words. For instance, four year old blind children are able to understand that the colours green or red refer to particular characteristics of an object even thought they cannot perceive it. In addition, blind children can distinguish the difference between *to see* and *to look* without having

any visual experience. In Landau's study of blind children, a blind girl knew that for someone to see something, the object must be visible for the viewer. The girl, however, used the word look with the meaning of exploring objects with her hands. Blind children are unable to identify objects which are not in their reach, they are only able to perceive the world by touch, whereas seeing children can explore the world both haptically and visually. Manual exploration can substitute for visual exploration, but it still leaves the blind child at a disadvantage when it comes to testing and confirming conjectures about objects and their meanings. For instance, a blind child could be too far to experience the rabbit or the ball which is being discussed by the speakers. Blind children's extralinguistic context for the words they hear differs from children who are able to see. The role of experience in learning a mental lexicon is mostly a problem of learning from often impoverished and partial experience in normal circumstance as well. As Barbara Landau states, " No one requires experience of every dog to acquire the word dog" (Landau, 1985, p. 2). Children's experience with new words can be divided into many different interpretations of how to understand the words, and every child has to come up with hypothesis about the meaning of individual words which is only possible if it is innately constrained. Often blind children produce their first words later than sighted children. They produce their first words around fifteen to twenty months, but at the age of three years, they are perfectly indistinguishable from sighted children. Nevertheless, it does not always have to be the case. In comparison to the mothers of seeing children, mothers of blind children are more insistent in their attempt to teach the children, producing more descriptions of objects, their location and their actions. Blind children can rely on their haptic capacity to explore the world, which provide the substitution for the visual experience providing the information about the world which language describes. The vocabulary of first fifty words of sighted children and blind children do not differ. In a study conducted by Landau, two blind children were producing similar words, predominately nouns as seeing children. For instance, *doll*, *cookie*, *daddy, mommi,* and so on (Landau, 1985, pp.20-29). When acquiring the meaning of nouns, blind children tend to use the gestalt type of learning strategy. The first combination of words blind children produce has a clear transition from gestalt type of learning to analytic type of learning (Perez, 2006, pp. 357-361).

7.2 Deaf Children

Language can exist with the absence of sound. Sign languages involve a complex system of gestures which do not derive from spoken language, instead, they are created within the communities of deaf individuals. The structure and development of American Sign Language (ASL) and spoken language are similar. For instance, ASL has hand shapes and positions where each individual word is composed similarly to tongue and lips shape which allow the speakers to produce the phonemes of spoken language. A sign language has its morphemes and grammar which allows the speakers to form words into sentences which are similar to those in spoken language.

Deaf children acquire new words much in the same respect as hearing children. The linguistic environment of deaf children differs in significant respect from the typical linguistic environment of hearing children from their early childhood. The most significant and fundamental difference between those two environments is that the linguistic environment of children with the ability to hear provides linguistic input. Deaf children who have hearing parents may not have very significant exposure to any language in their early childhood. Because of their sensory loss, deaf children do not perceive their parents speech. In most instances, the parents do not know sign language, therefore, the children are also not exposed to any sign language until their school age, but it still does not make the children mute. Furthermore, in the typical language learning environment the input children receive is auditory. The most suitable counterexample is a child whose parents are deaf too. The child is exposed to a sign language since birth. Children whose parents are deaf benefit from visual rather than auditory input. Spoken words do not sound like the concepts they represent. The word *elephant* doesn't sound like the animal it stands for. In contrast, some sign languages have signs iconic to what they represent or they appear iconic to the adult speakers. More than 90 percent children who were born deaf have hearing parents. Because of their sensory loss those children are in vast majority deprived of spoken language and the acquisition of spoken words is a very difficult and often frustrating task. Until recently, deaf children where trained in spoken language instead of sign language. When hearing children acquire a spoken language, they usually pass several milestones at predictable age. Hearing children normally learn their first words when they are

twelve months old. They acquire the basics of syntax between 18 to 24 months of age which enables them to produce two words utterances. English inflectional morphology such as word endings usually emerge between two and half to three and half years. Meier (1991) points out that children pass those milestones at similar age independently of their linguistic environment , and that the signing children who are 12 months old are at one word stage just as hearing children. This suggests that this regularity in language acquisition is controlled by maturation. They are able to produce isolated signs from the vocabulary of an adult language. Even though children may have highly evolved innate mechanism for the processing and production of spoken language, those mechanisms are flexible enough so that the sign language is not a disadvantage. Some neuropschological evidence come from a study which suggests that “the temporal-lobe in the human brain involved in auditory processing in the hearing can be reassigned to visual processing” in children who were deaf since birth. Learning distinct words does not depend on the auditory-vocal channel. When children of normal mentality are deprived of sound perception, they are able to come up with an alternative method which produces the same content and structures as any other system of spoken language (Meier, 1991, p.61-4).

Learning of noun meaning is not dependent on the auditory-vocal channel. Even with the absence of vision children are able to learn the concepts behind the word's meaning. Furthermore, blind children are able to learn new words at the same pace as seeing children even if they are deprived of the sensory experience, which is an advantage in decoding the input children receive from their environment when learning new words. Furthermore deaf children are not exposed to any ordinary auditory input as hearing children in order to learn the patters and rules of their language, but they do acquire a sign language, which has hand shapes and positions which in combination form words. Children who are born deaf or blind learn the meanings for things as rapidly as children in normal circumstances in all its complexity.

8. Discussion

Learning the meaning of words is a complex process that develops through stages. It builds on innate abilities which are inherited. From the previous chapters it becomes apparent which are the basic aspects of the processes involved in noun meaning acquisition and which are the abilities children employ in order to learn the meanings of nouns. From the experimental studies, which dealt with the children's ability to extract individual units from the speech stream and to segment them, it demonstrates that preverbal infants possess an innate mechanism to detect individual phonemes, including syllable patterns, in the speech stream they are constantly exposed to from their environment. It seems as if they know on which sound patterns to focus on in decoding the continuous stream of speech. All this points to the idea that the process of language acquisition is partly innate. The capability to distinguish individual units of speech is the basis for children's further development in assigning meanings to individual lexical units. In acquiring English, children rely on stress cues when they segment words from fluent speech of adult speakers.

When children break into the speech system of their language, they can begin with assigning meanings to word concepts. Children use several universal strategies and cues which help them to learn the meanings of nouns. They possess the ability to fast map which requires some sort of hypothesizing about the word's meaning. This ability seems to be inherited also, because there is not other explanation how children can generalize about newly acquired words beyond their experience with the words. Learning from both input from the environment and their experience with the language affects children's early vocabulary a great deal. The first words children produce are based on their initial experience from the speaking community, how a parent speak to their child affects the children's first produced words.

In using these universal strategies children make assumptions about the meaning for an object based on some common property of the acquired nouns. Several experimental studies have shown that children tend to assume that a newly acquired word refer to a whole object rather than parts of an objects, its properties or relations between objects. The usage of those strategies cannot be learned, it has to be innate.

Furthermore, children over-extend and under-extend the meaning of words based upon perceptual similarity of two objects. For instance, a child might call all furry, four legged animals cats. There is enough evidence to suppose that those errors are deliberate, and children produce them in order to communicate words which they have not yet learned or just forgot at the time of speaking which can be seen as their communicative strategy.

In producing new word forms, children also use several strategies, compounding conversion, and productivity. Children use those strategies based on their previous linguistic knowledge, but it is not yet clear how exactly children use their previous linguistic knowledge, but the most plausible explanation seems to be that children possess innate mechanisms for inferring new word forms.

Children do not need perfect sensory abilities, to see or hear, in order to learn a language, either a spoken one or a sign language. Manual exploration of the world can be fully substituted for visual experience with the limitation of words such as *look* and *see* where the meaning differs from sighted children. The input from the environment is an important part of the learning process. It can speed up the process of language acquisition, and it can also affect children's early vocabulary, but it is not necessary in language acquisition. Deaf children are able to learn a sign language without being exposed to a sign language until their school age, but it still does not make the children mute.

9. Conclusion

Learning the meaning of nouns is a complex process which requires usage of different abilities. Children use their cognition and perception to learn about the language. They make use of some innate mechanisms which support the word segmentation process in order to infer new word forms. Furthermore, children often learn words from partial or impoverished experience, employing universal strategies in order to learn the meanings of words. However, it is not clear how exactly children come to develop those abilities. Experience with the language is also an important part of the learning process. Not all new words children learn are in co-occurrence with their meaning. Yet children learn the meaning of nouns almost effortlessly even with the absence of visual or auditory

experience.

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